AGENDA

Montana Sage Grouse Oversight Team (MSGOT)

Teleconference Meeting[1]

April 26, 2018: 11:30 a.m. – 12:00 p.m.

Montana Department of Environmental Quality Headquarters
Director's Conference Room 111
Lee Metcalf Building
1520 E. 6th Ave, Helena

11:30: Call to Order and Introductions, John Tubbs

11:35: Cloud Peak Energy's Spring Creek Mine Amendment 5 Transportation Corridor Mitigation Plan

- Introduction and Overview: Montana Sage Grouse Program and DEQ
- MSGOT Discussion
- Public Comment
- Possible MSGOT Executive Action

11:55: Public Comment on Other Matters not on this Agenda

NOTE: Agenda item times are approximate. Actual times may vary by up to one hour. Attendees who may need services or special accommodations should contact Carolyn Sime (406-444-0554 or csime2@mt.gov) at least 5 working days before the meeting.

[1] The public is invited to attend and comment in person in Room 111 during the meeting.

AGENDA ITEM: CLOUD PEAK ENERGY'S SPRING CREEK MINE AMENDMENT 5 TRANSPORTATION CORRIDOR MITIGATION PLAN

ACTION NEEDED: APPROVAL OF THE GREATER SAGE-GROUSE MITIGATION PLAN FOR THE SPRING CREEK MINE'S PROPOSED AM5 HAUL ROAD PROJECT

SUMMARY:

In December 2015, Cloud Peak Energy submitted an application to the Montana Department of Environmental Quality (DEQ) to add new lands to the current Surface Mining Permit under the Montana Strip and Underground Mine Reclamation Act (MSUMRA). This proposed permit amendment (AM5) is for a transportation corridor, or haul road, connecting Cloud Peak's existing Spring Creek Mine in Montana with its Youngs Creek Mine in Wyoming. The existing Spring Creek Mine is located in Montana approximately 12 miles northwest of Decker, Montana. The proposed haul road would be approximately nine miles long and is located on mostly private lands owned by Cloud Peak Energy.

MSUMRA requires this type of project to avoid or minimize impacts for designated State sensitive species, such as the Greater Sage-grouse. The AM5 amendment application was submitted prior to the effective date of Executive Order 12-2015 (EO), however other ancillary state permits will be needed for the project such as a Stormwater Construction Permit, which will require consultation with the Sage Grouse Program. The haul road would deviate from several stipulations of EO, including: no-surface-occupancy within lek buffers, noise, loss of vegetation in core areas, etc. Therefore, DEQ and Cloud Peak Energy worked collaboratively with the Program and considered EO guidance to inform development of mitigation to offset impacts of the proposed amendment.

Previously, MSGOT endorsed (December 2016) developing a mitigation approach informed by the Thunder Basin Grasslands Prairie Ecosystem Association Strategy. After more thorough research and analysis during development of the Draft EIS, it was recognized that voluntary actions undertaken under membership within the Association and participation in the Association's Strategy cannot be simultaneously used to fulfill any required mitigation in Montana. This is because Cloud Peak Energy received regulatory relief from potential takings violations of the federal Endangered Species Act in exchange for implementing the voluntary actions. The same actions can't also be required to fulfill regulatory requirements under MSUMRA or the mitigation hierarchy under the EO. Instead, the State of Montana will acknowledge the voluntary actions that Cloud Peak Energy will undertake but will not require them as part of issuing state permits.

Additionally, the parties realized that opportunities for effective, on-site mitigation were limited. Previous anthropogenic disturbances such as existing coal mining, and coal bed methane exploration, in addition to the cumulative impacts of potential future projects independent of the proposed haul road are already impacting, and will continue to impact, habitat in this area. Also, any benefits of on-site mitigation would likely be negated by the haul road project itself and the intensive nature and permit duration of the activity now being considered. Therefore, the Program strongly recommended consideration of off-site mitigation for the project to offset the direct and secondary impacts of the proposed haul road on sage-grouse. Cloud Peak voluntarily agreed.

[continued]

Cloud Peak Energy and the Program collaboratively developed the proposed mitigation plan. The mitigation plan:

- describes the transportation corridor and summarizes activities that would occur within it
- summarizes potential impacts to sage grouse and sage grouse habitats
- describes adherence to the mitigation hierarchy through avoidance, minimization, reclamation, and compensatory mitigation, including a financial obligation to deposit funds into the Stewardship Account prior to initiating construction; and
- describes additional voluntary conservation efforts that will be recognized by the State of Montana and the Program in the general area outside of the transportation corridor itself.

DEQ, Cloud Peak Energy, and the Program seek MSGOT's approval of the mitigation plan, which includes compensatory mitigation to accomplish off-site mitigation. MCA § 76-22-105. Cloud Peak Energy has voluntarily committed to this proposed mitigation plan (including compensatory mitigation) and would minimize impacts to sage-grouse, as required by MSURMA.

If MSGOT approves the proposed mitigation plan, DEQ would incorporate it into the draft EIS. The draft EIS would be released for public comment this Spring. DEQ expects to complete the Final EIS by the end of Summer 2018. When the EIS is complete, and if the amendment is ultimately approved by DEQ, the proposed mitigation plan would be part of the project approval, included in DEQ's Record of Decision, and incorporated into state permits as appropriate. Funds would be deposited into the Stewardship Account prior to construction.

PROGRAM RECOMMENDATION:

The Program Manager recommends MSGOT approve the Greater Sage-grouse Mitigation Plan for the Spring Creek Mine's Proposed AM5 Haul Road Project.

Appendix B: Greater Sage-grouse Mitigation Plan for the Spring Creek Mine's Proposed AM5 Haul Road Project

April, 2018

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List of Acronyms and Abbreviations

AM5	Amendment 5
APLIC	Avian Power Line Interaction Committee
BMP	Best Management Practices
CPE	Cloud Peak Energy Resources LLC
dBA	A-weighted decibel
DEQ	Montana Department of Environmental Quality
EIS	Environmental Impact Statement
EO	Montana Executive Order
GIS	Geographic Information System
HQT	Habitat Quantification Tool
HRRP	Habitat Recovery and Replacement Plan
kV	Kilovolt
Lidar	Light Detection and Ranging
m^2	Square meters
MCA	Montana Code Annotated
MFWP	Montana Fish, Wildlife and Parks
MPH	Miles per hour
MSGOT	Montana Sage Grouse Oversight Team
MSUMRA	Montana Strip and Underground Mine Reclamation Act
NRCS	Natural Resources Conservation Services
NSO	No Surface Occupancy
Program	Montana Sage Grouse Habitat Conservation Program
SCM	Spring Creek Mine
SMCRA	Surface Mining Control and Reclamation Act of 1977
Stewardship Act	Montana Greater Sage-grouse Stewardship Act
Stewardship Fund	Montana Sage Grouse Stewardship Fund
WESTECH	WESTECH Environmental Services, Inc.
YCM	Youngs Creek Mine

1.0 Introduction and Background

Cloud Peak Energy Resources LLC (CPE) is the parent company for both the Spring Creek Mine (SCM) near Decker, Montana, and the Youngs Creek Mine (YCM) in northern Wyoming, which abuts the Montana/Wyoming state line. In December 2015, SCM submitted an Amendment application (AM5) to add lands to their Surface Mining Permit (#C1979012) in order to construct an approximately 8.5-mile-long haul road corridor connecting their SCM-permitted property with the YCM-permitted property in northern Wyoming (Figure 1). The proposed haul road project would be entirely within the state of Montana. It would facilitate equipment sharing between the two mines and the transportation of coal resources from YCM to SCM for additional processing and transport. The geographic area delineated within the AM5 application constitutes the maximum area in which new activity can occur without initiating a new permit amendment application, and is also referred to as the "disturbance limit" or "disturbance corridor" for analysis purposes.

The proposed haul road corridor encompasses approximately 969.7 acres (970 acres, rounded). However, SCM strives to minimize impacts wherever possible and the actual disturbance limit for this project would differ from what is permitted. In this instance, SCM would operationally (via fencing) limit access to approximately 7 acres along the east-central edge of the disturbance boundary to honor the recommended buffer distance (U.S. Fish and Wildlife Service 2017) around a golden eagle (*Aquila chrysaetos*) nest. That change in acreage is reflected throughout the rest of this document; i.e., physical disturbance would impact approximately 962.4 total acres rather than the total permitted acreage.

The disturbance corridor for the haul road project would pass through two Core Population Areas (i.e., Core Areas) and General Habitat for the greater sage-grouse (*Centrocercus urophasianus*), as designated by Montana Fish, Wildlife and Parks (MFWP 2015) and addressed in State of Montana in Executive Orders (EOs) 12-2015 and 21-2015 (State of Montana 2015a, 2015b) (Figure 2). No designated sage-grouse Connectivity Areas are present in the project area. Core Areas have the highest conservation value for greater sage-grouse (hereafter, sage-grouse); General Habitat also provides habitat for sage-grouse, though it is not identified as a higher value type (Montana Code Annotated [MCA] 76-22-103(3) and (7), respectively).

Current guidance for managing existing and planned activities within these sage-grouse habitats is outlined in Montana EO 12-2015 (State of Montana 2015a). That EO also created the Montana Sage Grouse Habitat Conservation Program (Program) and set forth the state's approach for the conservation, regulatory protection, and management of sage-grouse habitats; i.e., Montana's sage-grouse Conservation Strategy. The 2015 Montana Legislature passed the Montana Greater Sage-grouse Stewardship Act

(Stewardship Act, 2015 MCA 76-22-101 to 76-22-118) which codified the Montana Sage Grouse Oversight Team (MSGOT) and Montana Sage Grouse Stewardship Fund (Stewardship Fund), both of which are intended to support the state's comprehensive efforts on behalf of sage-grouse.

Although SCM submitted the AM5 amendment application prior to January 1, 2016, the effective date of EO 12-2015 (State of Montana 2015a), other related ancillary permitting processes were completed after that date. Additionally, both the Montana Strip and Underground Mine Reclamation Act (MSUMRA) and the Surface Mining Control and Reclamation Act of 1977 require mitigation for designated State sensitive species, such as the sage-grouse. Therefore, the Montana Department of Environmental Quality (DEQ) followed EO guidance and contacted the Program for input during the permitting process and development of the Draft Environmental Impact Statement (EIS) for the proposed project. The Program worked with the DEQ and SCM to review the proposed AM5 amendment for consistency with EO 12-2015.

SCM's Mitigation Plan for the haul road project is organized to:

- describe the disturbance corridor for the proposed haul road project;
- summarize project activities that would occur within the disturbance limit;
- summarize potential project impacts to sage-grouse and sage-grouse habitats;
- describe avoidance, minimization, and reclamation efforts, and the collaborative approach used to identify the appropriate level of compensatory mitigation, and document the financial obligation agreed to by the Program and CPE (on behalf of SCM); and
- describe additional voluntary conservation efforts undertaken in the general area outside the corridor itself.

2.0 Description of Haul Road Disturbance Corridor

2.1 General Characteristics

The haul road project is located in southeastern Big Horn County, Montana, west of the Tongue River Reservoir and west-northwest of Decker, Montana. The disturbance corridor itself spans portions of Townships 8 and 9 South, and Range 39 East. The majority of the project would occur on lands owned by subsidiaries of CPE. Approximately 1.2 miles of the disturbance corridor would pass through a Montana State-owned section; the State granted SCM a commercial lease for this purpose in September 2015.

The disturbance corridor is generally characterized by a wide diversity of habitat types and topographic gradients. It crosses four main drainages from north to south: Squirrel

Creek, Dry Creek, Youngs Creek, and Little Youngs Creek (Figure 1). Squirrel Creek and Youngs Creek are perennial streams. Little Youngs Creek is an intermittent creek and Dry Creek is ephemeral (flows only for brief periods in response to precipitation or snow melt). Multiple additional unnamed, ephemeral tributaries of those four drainages also dissect the area. All four main channels flow into the Tongue River southeast of the project area. The project area is in a semi-arid region, averaging 11.6 inches of precipitation annually. Elevations within the disturbance corridor range from approximately 3,680 to 4,220 feet above mean sea level.

The current primary land use in the vicinity of the haul road project is cattle grazing (rangeland and pastureland), with hay (irrigated and dryland) production occurring along the terraces of Youngs Creek and Little Youngs Creek in the southern portion of the disturbance corridor. The overall rangeland condition of the general project area based on baseline vegetation sampling was identified as in the "low good condition class" (WESTECH Environmental Services, Inc. [WESTECH] 2015).

2.2 Vegetation Communities and Physical Characteristics

2.2.1 Vegetation Communities

Vegetation community types within the disturbance corridor were delineated during baseline inventories completed by WESTECH Environmental Services, Inc. (WESTECH 2015) as part of the DEQ permitting process (Figure 3). That survey area included the proposed disturbance corridor and immediately surrounding lands. Those community types were defined by, and named for, dominant and codominant plant species (Table 1). The same nomenclature was used to identify and quantify habitats for which compensatory mitigation would be required due to project-related disturbance (see Section 5.4).

Shrubland communities are the most common (Figure 3, Table 1) in the disturbance corridor, though most stands are intersected and/or influenced by other habitat types (e.g., conifers) or features such as topography or existing infrastructure. Big sagebrush (*Artemisia tridentata*) is the most common shrub type and occurs on all topographic positions in the sampling area, except major drainage floodplains and terraces where introduced grasses (e.g., haylands) and riparian/wetland communities dominate (WESTECH 2015). Silver sagebrush (*Artemisia cana*) and/or skunkbush sumac (*Rhus aromatica*) dominate or codominate most of the remaining shrub communities.

Conifer-dominated communities (including conifer breaks) are scattered throughout the project area, but are most common in the northern half (Figure 3) of the disturbance corridor. These communities are dominated by ponderosa pine (*Pinus ponderosa*) and/or Rocky Mountain juniper (*Juniperus scopulorum*), typically with a grass understory (WESTECH 2015).

Table 1. Habitat Community Types within the Disturbance Limit for the Spring Creek Mine's Proposed Haul Road Project, as described in WESTECH 2015.

Baseline Vegetation Community Type[1]	Core Area Acreage	General Habitat Acreage	Total Acreage within Corridor Boundary
Shrublands (native grass and crested wheatgrass understory)	338.24	266.69	604.93
Conifers/Conifer-dominated Breaks	20.48	106.22	126.70
Shrub-dominated Breaks	22.19	55.20	77.39
Native Grasslands	37.09	14.59	51.68
Drainage Bottom (herbaceous and mesophytic shrub - moist meadow)	1.34	17.01	18.35
Other Habitats[2]	14.11	52.85	66.69
Existing Infrastructure/Surface Impacts[3]	7.49	8.92	16.41
Totals	440.94	521.48	962.42

[1] Nomenclature for vegetation community types follows the Baseline Vegetation Report and/or map codes prepared for the AM5 project: Baseline Vegetation Inventory, Arrowhead Amendment Project, Big Horn County, Montana. WESTECH Environmental Services, Inc. (WESTECH) 2015.

[2] Other Habitats = hay cropland, pastureland-grazed/go-back land, prairie dog colonies (all Tame Pasture communities), and Deciduous tree bottom per WESTECH 2015. Also includes a small (0.39 acre) pond identified from CPE's surveyed features shapefiles (all shapefiles provided to the Program).

[3] Existing Infrastructure/Surface Impacts = roads (improved gravel, two-tracks: 7.44 acres in Core Area; 8.54 acres in General Habitat) and other surface or soil impacts resulting from grazing, agriculture, or human activities (WESTECH 2015). Roads include those mapped during the original baseline inventory and subsequent additions from CPE's surveyed features shapefiles (all shapefiles provided to the Program).

Shrub-dominated breaks normally occur on broken, moderately steep to very steep erodible slopes, and on shallow soils frequently associated with rock outcroppings (WESTECH 2015). Vegetation cover is typically sparse and dominated by grass, shrubs, and/or conifer species, depending on soil characteristics. This community type is found on highly dissected terrain within the disturbance corridor.

Native upland grasslands within the disturbance limit are completely dominated by native grass (and forb) species with only limited, sporadic occurrences of introduced species (WESTECH 2015). This community type is comprised largely of bluebunch wheatgrass (*Agropyron spicatum*), western wheatgrass (*Agropyron smithii*), and needle-and-thread (*Stipa comata*). Native upland grasslands are present in a variety of topographical settings and aspects throughout the corridor.

Two communities of drainage bottom comprise a generalized type of moist meadow (relative to potential sage-grouse use): herbaceous bottom and mesophytic low shrub bottom (WESTECH 2015). As the name indicates, these communities are limited to drainage bottoms and adjacent lands that receive supplemental water from snow catchment, overflow, sub-irrigation, or seepage, such as toe slopes, swales, and coulee banks. Herbaceous bottom communities are characterized by various grasses, sedges (*Carex* spp.), and common cattails (*Typha latifolia*). The low shrub bottom type may include silver sagebrush, skunkbush sumac, western snowberry (*Symphoricarpos occidentalis*), Wood's rose (*Rosa woodsia*), and/or common chokecherry (*Prunus virginiana*), with various grasses also present.

Some less abundant habitat types are grouped into a broad "Other Habitats" category in Table 1. Most habitats within this category are part of the "Tame Pasture" community delineated during the baseline vegetation inventory (WESTECH 2015), including two small black-tailed prairie dog (*Cynomys ludovicianus*) colonies. Pasturelands (native and/or planted) and haylands comprise the majority of the "Other Habitats" category, and approximately 3 percent of the disturbance corridor itself. Pasturelands are used primarily for cattle grazing and occur on stream terraces and atop plateaus (when supplemental water is provided) throughout the area. Haylands are limited to floodplains and terraces along major treed drainage bottoms, and consist primarily of introduced grass species such as crested wheatgrass (*Agropyron cristatum*) and smooth brome (*Bromus inermis*), with alfalfa (*Medicago sativa*) seeded variably among fields. The vegetation baseline report also included an area of big sagebrush/crested wheatgrass at the northern end of the disturbance limit in the Tame Pasture community. However, as shrub canopy cover in that area is commensurate with the big sagebrush communities with native grasses in the understory (WESTECH 2015), acreages identified as big sagebrush/crested wheatgrass are combined with other shrublands in Table 1 and for compensatory mitigation purposes.

The remaining types grouped into the "Other Habitats" category in Table 1 are Deciduous Tree Bottom and a small (0.39 acre) pond. The tree bottom community is described as riparian gallery forest comprised largely of the plains cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygdaloides*), boxelder (*Acer negundo*), and green ash (*Fraxinus pennsylvanica*) (WESTECH 2015). Deciduous tree bottom communities are restricted to Youngs Creek and Squirrel Creek within the narrow disturbance corridor, with a small population along Little Youngs Creek. The understory in this community type is dominated by weeds induced by sustained, intensive cattle use (WESTECH 2015). Invasive and/or weed species documented in the survey area include cheatgrass (*Bromus tectorum*), Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), common hounds'-tongue (*Cynoglossum officinale*), and dalmatian toadflax (*Linaria dalmatica*).

Existing infrastructure and other forms of surface impacts were also delineated within the disturbance corridor during the baseline vegetation inventory (WESTECH 2015). Most (97%) of these features consist of improved gravel or two-track roads, though soil disturbance associated with grazing or agriculture also falls into this category (Table 1).

2.2.2 Physical Characteristics

As described above, multiple vegetative communities within the disturbance corridor occur in various topographic settings (WESTECH 2015). Terrain is an important component of the structural niche occupied by terrestrial species, such as sage-grouse (Riley et al. 1999). The degree of terrain slope (angle) within the disturbance limit was analyzed based on light detection and ranging (lidar) imagery generated for an overlapping CPE project. This optical remote-sensing technique uses laser light to densely sample the surface of the earth, producing highly accurate location, height, and distance measurements. The lidar bare earth data were converted into a multi-point terrain database, which was then used to generate a high-resolution (3 meter x 3 meter [3m^2] pixels) raster image. The slope analysis was then applied to the raster file using Geographic Information System (GIS) mapping software. Results from this analysis demonstrated that moderately steep to steep slopes occur throughout the haul road disturbance corridor (Figure 4). Much of the area has a slope of 20 degrees (36.4%) or more; such terrain may be avoided by sage-grouse in otherwise suitable (i.e., sagebrush) habitats (Baxter et al. 2017, Walker et al. 2016, Caudill et al. 2013, Bruce et al. 2011, Bunnell et al. 2004).

Terrain roughness (ruggedness or irregularity) within the disturbance corridor was assessed using the same lidar bare earth data, 3m^2 resolution raster image, and GIS software (Geomorphometry and Gradient Metrics (V2.0, http://evansmurphy.wix.com /evansspatial), Surface Texture, Roughness toolbox). Roughness was calculated as the standard deviation of each pixel's elevation relative to its neighbors within a 100-meter radius (i.e., circle) of each pixel (Walker et al. 2016, Doherty et al. 2008). This approach provides an objective measure of topographic heterogeneity (Riley et al. 1999). According to that analysis, nearly the entire AM5 Corridor is classified as "highly rugged" or "extremely rugged" (Crawford 2008, Riley et al. 1999). As with slope, terrain roughness has been shown to have a negative effect on habitat selection by sage-grouse in all seasons (Walker et al. 2016, Coates et al. 2014, Dzialak et al. 2011 and 2012, Doherty et al. 2008).

2.3 Sage-Grouse Populations

As shown on Figure 2, six confirmed active (i.e., birds present in at least 1 of the last 10 years) (MFWP 2017) sage-grouse leks are present in the immediate vicinity of the haul road project. Long-term (1981-2017) attendance data collected for these six leks by SCM and other entities indicate that the local sage-grouse population in that area has fluctuated over time. Average peak male counts per lek, per year at these six sites were highest during the early and later 1980s and mid-2000s, with a smaller peak from 1999 through 2001. Annual attendance indices did not exceed nine (9) males per lek per year even in highest cycle periods; the highest male count at an individual lek over time was 20. Annual indices were below the long-term average of 2.9 males per lek per year during 18 of the last 33 monitoring years in which males were classified; sexes were grouped in 4 years.

Results from some research have shown that a combination of factors and impacts may have more influence over long-term persistence by sage-grouse than a single anthropogenic line or point feature (Leu and Hanser 2011). This may also be true in the vicinity of the haul road project. Natural weather occurrences such as extended droughts, persistent cold and wet springs, or untimely severe storms can impact nesting and brood-rearing efforts, with results from poor nest success in a given year extending into one or more subsequent years. Such impacts could be exacerbated by changes in climate conditions at multiple scales. Conifer encroachment into sagebrush communities, outbreaks of diseases such as West Nile virus, and invasive species such as cheatgrass also can have negative impacts on sage-grouse and their habitats. Other contributing factors include, but are not limited to: grazing management practices that may degrade important nesting and brood-rearing habitats; habitat loss or fragmentation through natural (e.g., wildfire) or manmade causes; networks of roads and trails needed to support energy development and ranching operations; energy-related infrastructure such as fences, pipelines, and powerlines; flooding due to coal bed natural gas discharge water; and traffic and noise associated with extractive industries, highways, and railroads. All of these impacts have occurred within the general project area at varying levels and durations over time.

3.0 Project Activities and Features within the Disturbance Corridor

As described above, the proposed project would create a haul road that would enable equipment to be shared between the SCM and YCM, and coal to be transported from the YCM north to SCM's existing facilities in Montana (Figure 1). Coal would be transported using trucks hauling approximately 280 tons. Other regular support traffic would consist of water trucks for dust suppression, motor graders for road maintenance, and various mid-weight (e.g., fuel trucks) and light-duty (e.g., pickup trucks, vans) vehicles needed for equipment maintenance and to transport personnel to and from work sites, respectively. SCM anticipates that average daily haul traffic would consist of four trucks per hour (two loaded, two empty) running at approximately 15-minute intervals, and an average of 1.4 support vehicles per hour, for a total average of approximately 130 vehicle trips per day (Maunder 2017). This level of traffic could occur up to 24 hours per day and 7 days per week, year-round. The average speed limit for all traffic would be 16 miles per hour (mph), with a maximum of 30 mph and a restricted limit of 10 mph for haul trucks traveling downhill in steeper terrain.

Supporting construction features and infrastructure to occur within the disturbance corridor include the following:

- road corridor approximately 8.5 miles long by 120-foot driving width;
  - safety berms measuring up to 12-feet high and 25-feet wide;
  - road height 30 to 92 feet above natural ground surface in some places (highest elevation at deeper drainage crossings);
  - approximately 6.5 million cubic yards of cut and fill materials during construction (designed for balance between cut and fill within the disturbance corridor);
  - average road base width of 296 feet (approximately 303 total acres disturbed or encompassed by the road bed);
- 31 culverts with appropriate designs to maintain stream flow, manage run-off and erosion, and facilitate wildlife movements at four major stream crossings;
  - diameter ranges from 1 to 27 feet (average 2 feet);
  - largest located at four primary stream crossings - culvert length ranges from 324 to 608 feet (386- to 668-foot road base), diameter ranges from 10 to 27 feet, height of road above natural ground surface ranges from 30 to 92 feet;
  - constructed during late summer or fall (drier times of year);
- overhead, 34.5 kilovolt (kV) high voltage distribution line;
  - approximately 8.33 miles long;
  - co-located along the eastern side of the road alignment;
  - single-pole construction with five lines (three conductors, one ground, one fiber optic), built to current Avian Power Line Interaction Committee (APLIC) recommendations to minimize risks of electrocution and collision, and prevent perching or nesting by avian predators (APLIC 2006, 2012, 2015);
  - pole height approximately 60-65 feet above ground;
  - average distance between poles 300-350 feet (total between 130-160 poles);
- portable or stationary lighting, strategically located for safety;

- wildlife-friendly fencing along outer limit of disturbance corridor, built per MFWP (2012) and/or Natural Resources Conservation Service (NRCS 2012) recommendations to facilitate wildlife movements (further adjustments in fence placement or design may be made in the future based on wildlife movement patterns);
- soil stockpiles;
- sediment and settling ponds; and
- other sediment (e.g., erosion) control and Best Management Practices (BMPs).

Road construction is targeted to begin as soon as possible upon completion of the permitting process and may take up to 2 years to conclude, dependent on weather and ground conditions, availability of contractors and/or equipment, and other factors. The road is expected to be in use until 2030 or 2031, after which the area would be reclaimed per SCM's DEQ permit requirements.

4.0 Project Deviations from Montana EO 12-2015

Stipulations recommended in EO 12-2015 (State of Montana 2015a) are designed to maintain existing sage-grouse populations and levels of suitable sage-grouse habitat by regulating uses and activities in Core Areas and General Habitat in a manner that sustains sage-grouse abundance and distribution in Montana. The Montana EO and the Stewardship Act delineated Core Areas as those of "highest conservation priority" (State of Montana 2015a, MCA 76-22-103(3)). As a result, stipulations and conditions for development under the EO are most conservative in Core Areas. Delineated General Habitat areas represent those important for maintaining the abundance and distribution of sage-grouse across Montana, but not identified as a Core or Connectivity Areas (MCA 76-22-103(7)). Development scenarios in General Habitat are more flexible than in Core Areas, but must still be designed and managed to maintain sage-grouse populations and habitats (State of Montana 2015a).

4.1 Expected Deviations from Montana EO 12-2015

The proposed project would deviate from multiple stipulations applicable to new uses and activities in Core Areas and General Habitat (State of Montana 2015a, Attachment D, as amended). Summaries of those stipulations and expected deviations are described below.

- **Surface Disturbance**

  <u>EO Stipulation (Core Areas only)</u>: Surface disturbance will be limited to 5% of suitable sage-grouse habitat averaged across the area affected by the project.

Project Deviation: The Density Disturbance Calculation threshold of 5% in suitable habitat in Core Areas would be exceeded due to existing surface disturbance in the analysis area used for this calculation.

- **Surface Occupancy**

  EO Stipulation – Core Areas: Within 0.6 miles of the perimeter of active sage-grouse leks there will be no surface occupancy (NSO) for new activities. NSO, as used in these recommendations, means no surface facilities including roads shall be placed within the NSO area.

  EO Stipulation – General Habitat: Within 0.25 miles of the perimeter of active sage-grouse leks there will be no surface occupancy (NSO).

  Project Deviations: The disturbance corridor would pass through the 0.6-mile NSO buffer for three active lek sites in the immediate project area (Figure 2), and the 0.25-mile NSO buffer for one active lek (northern-most on Figure 2).

- **Seasonal Use**

  EO Stipulation – Core Areas: Activities (new) will be prohibited from March 15 - July 15 outside of the NSO perimeter of an active lek in Core Areas where breeding, nesting, and early brood-rearing habitat is present (production, maintenance, and emergency activity exempted). Discretionary maintenance and production activity will not occur between the hours of 4:00 - 8:00 a.m. and 7:00 - 10:00 p.m. between March 15 - July 15.

  EO Stipulation – General Habitat: Activities (new) will be prohibited from March 15 - July 15 within 2.0 miles of an active lek where breeding, nesting, and early brood-rearing habitat is present. Discretionary maintenance and production activity will not occur between the hours of 4:00 - 8:00 a.m. and 7:00 - 10:00 p.m. between March 15 - July 15.

  Project Deviations: The proposed project would occur during the seasonal use restriction period from March 15 through July 15. Discretionary maintenance activity associated with one or more project phases would also occur between the hours of 4:00 to 8:00 a.m. and 7:00 to 10:00 p.m. during that period. The proposed disturbance corridor is within 2.0 miles of six active leks.

- **Transportation**

  EO Stipulation (Core Areas only): Locate main roads used to transport production and/or waste products greater than 2 miles from the perimeter of active sage-grouse leks.

Project Deviation: The disturbance corridor would be closer to six active lek sites than the recommended distance of 2.0 miles.

- **Overhead Power Lines**

EO Stipulation – Core Areas:

a. If economically feasible, power lines within 4 miles of active leks should be buried;

b. If not economically feasible, then power lines should be consolidated or co-located with existing above ground rights of way, such as roads or power lines, at least 0.6 miles from the perimeter of active leks;

c. If co-location is not possible, the power lines should be located as far as economically feasible from active leks and outside of the 0.6 mile active lek buffer.

EO Stipulation – General Habitat: New overhead power lines will be located outside of General Habitat when possible. Where avoidance is not possible, develop a route or siting location that uses topography, vegetative cover, site distance, etc. to effectively protect identified sage grouse habitat in a cost-efficient manner.

Project Deviations: It is not economically feasible for SCM to bury the new overhead power line. Because SCM co-located the power line alignment within the disturbance limit for the proposed project, it would be within the 0.6-mile NSO buffer for three active leks. SCM will follow the APLIC guidelines. Due to the project location, it is not possible to avoid General Habitat.

- **Noise**

EO Stipulation (Core Areas and General Habitat): New project noise levels, either individual or cumulative, should not exceed 10 dBA (as measured by L_{50}) above baseline noise at the perimeter of an active lek from 6:00 p.m. to 8:00 a.m. during the breeding season (March 1 – July 15).

Project Deviations: Noise levels would increase above the recommended thresholds during construction and reclamation, but are expected to be within those parameters during operation.

4.2 Potential Direct and Indirect Impacts due to Deviations from Montana EO 12-2015

In addition to EO requirements, State permitting regulations (e.g., MSUMRA) require that potential impacts to sage-grouse and their habitats be considered and addressed prior to implementation of new development project activities not identified as exempt in EO 12-2015 (State of Montana 2015a).

Attachment H of EO 12-2015 (State of Montana 2015a) provides specific habitat definitions to assist with identifying important sage-grouse habitats in the state, and for purposes of implementing the EO relative to sage-grouse. These definitions are important during impact assessments and compensatory mitigation calculations for new projects to ensure that guidance outlined in the EO is followed to the extent practicable, and that appropriate levels of mitigation are applied when deviations from EO stipulations cannot be avoided. Definitions applicable to the haul road project are provided below.

> "<u>Suitable Habitat</u> – is within the mapped occupied range of sage grouse, and:
>
> 1. Generally has 5% or greater canopy cover of sagebrush, where "sagebrush" includes all species and sub-species of the genus *Artemisia*. This excludes mat-forming sub-shrub species such as *A. frigida* (fringed sagewort) and *A. pedatifida* (birdfoot sage). Sagebrush canopy cover may be less than 5% when complimented by other shrubs suitable for sage grouse cover requirements; or
> 2. Is moist meadow containing forbs suitable for brood-rearing within 300 yards of suitable sagebrush cover (as defined above). Introduced species such as alfalfa may be very important on these sites where native forbs are not available."
>
> "<u>Unsuitable Habitat</u> – is land within the historic range of sage grouse that did not, does not, nor would not provide sage grouse habitat due to natural ecological conditions such as badlands or canyons."

The intent of this broad definition of "unsuitable habitat" is to identify and describe smaller areas within larger sage-grouse habitat blocks that are unsuitable to the species due to topography or other natural ecological conditions, and that have not historically and do not currently provide sage-grouse habitat, nor are they likely to in the future.

Aspects of the project that are not consistent with the EO stipulations (State of Montana 2015a), and other project components, would have direct and indirect impacts on sage-grouse and their habitats in the project area. Direct impacts (e.g., injuries or fatalities to sage-grouse, habitat loss or fragmentation) are caused by the action and occur at the same time and place. Indirect impacts result from project attributes (noise, potential for noxious weed establishment or spread, etc.) and occur later in time or extend farther from the project site. Due to the expected life of the project, and the multi-year timeframe needed for sagebrush habitats to be fully reclaimed, any project-related impacts would persist for many years.

Construction of the proposed project could result in the direct loss of sage-grouse, including nests, within the disturbance corridor, depending on the timing of project initiation. During construction and, to a lesser extent, reclamation, such losses could occur through collisions of adult or young sage-grouse with vehicles or heavy equipment, or the loss of eggs or young chicks in the path of those vehicles. Collisions with vehicles and power lines could also occur during the operations phase of the project (Coates et al. 2014, Dinkins et al. 2014). Collisions with fence lines bordering the new road might occur, depending on their location relative to the terrain, whether or not marking devices have been installed, and other factors (Stevens et al. 2012).

A total of approximately 4.0 non-contiguous miles of the haul road disturbance corridor would traverse two sage-grouse Core Areas (PRB1 and PRB2) (State of Montana 2015b) (Figure 2). Those segments would encompass approximately 440.9 non-contiguous acres. The remaining corridor length (approximately 4.4 non-contiguous miles) would intersect approximately 521.5 non-contiguous acres designated as sage-grouse General Habitat (State of Montana 2015b). Although vegetation removal would be limited to only what was needed, construction, operation, and reclamation of the proposed haul road in these areas would result in the loss or fragmentation of potential sage-grouse nesting and brood-rearing habitats. Such impacts have been cited as an important factor in the rangewide decline of sage-grouse populations (Atamian et al. 2010, Crawford et al. 2004, Connelly and Braun 1997).

As noted, the disturbance corridor would intersect the 0.6-mile NSO buffer for three of the six leks in the immediate project vicinity. The entire disturbance corridor is located closer to all six lek sites than the recommended distance of 2.0 miles for transportation corridors. These factors would result in expected or potential impacts to breeding, nesting, and brood-rearing activities and habitats. Due to their fidelity to leks and nest sites, such responses could have a more lasting impact on the local population (Connelly et al. 2011). Sage-grouse movements (primarily of young broods) could also be hindered by project features such as the elevated road and steep berms or especially long culverts in some locations.

New perch sites such as power poles and fence posts would potentially increase the risk of avian predation on adult and young sage-grouse during all life stages, particularly in areas with few naturally tall features (Connelly et al. 2004, Ellis 1987). Sage-grouse also tend to avoid areas where power poles and power lines occur. This is believed to stem from their association of tall structures with perches for avian predators such as ravens (*Corvus corax*) or larger raptor species (Hanser et al 2011, Connelly et al. 2004). Results from a viewshed analysis conducted for the proposed project indicated that the top of the power poles would be visible from five of the six sage-grouse leks located near the disturbance corridor. That analysis was based on 50-foot pole spacing (vs. actual 300- to 350-foot spacing) and visibility from approximately 2 feet above ground level at the center of each lek, to simulate the average height of an adult male sage-grouse.

New traffic and noise levels associated with all phases of the haul road project would occur in extremely or relatively close proximity to all six active leks in the immediate project area. Noise levels would increase above thresholds recommended in EO 12-2015 (State of Montana 2015a) during construction and reclamation, but are expected to be within those parameters during operation. These regular and extended periods of increased noise levels would potentially disrupt breeding activities for any birds present (Blickley et al. 2012, Walker et al 2007), and could result in displacement of sage-grouse and/or abandonment of one or more leks.

As indicated, potential impacts from the proposed project would influence multiple life stages and seasonal needs of sage-grouse in the area for an extended period of time, either directly through impacts to sage-grouse or their habitats or indirectly. This would be especially true when added to existing impacts in the vicinity of the project. Together, these factors could result in the loss, avoidance, or displacement of sage-grouse from the immediate project area and reduced breeding efforts or success, which ultimately could impact productivity and overall population viability for at least the life of the project.

5.0 Adherence to the Mitigation Hierarchy

Montana EO 12-2015 (State of Montana 2015a) states that all new land uses or activities subject to State agency review, approval, or authorization shall follow the sequencing approach of avoid, minimize, reclaim, and compensate, as appropriate (page 4, Section G, 13). That section further states that "mitigation shall be required even if the adverse impacts to sage-grouse are indirect or temporary," and describes a variety of mitigation tools with which to meet that requirement. Section N, 15 (page 8) clarifies that these requirements also apply to new activities associated with existing land uses in place prior to the effective date of the EO, as is the case for the proposed haul road project. As noted, mitigation for sensitive species such as sage-grouse is also required by MSUMRA and SMCRA.

The Program worked with the DEQ and SCM to review the proposed AM5 amendment for consistency with EO 12-2015. During project discussions conducted in early February 2018, SCM provided the Program with a list, detailing efforts during project planning to select a disturbance corridor that, to the extent possible, avoided or minimized potential impacts to sage-grouse and their habitats during construction, operation, and reclamation. This approach was also used to balance impacts to overlapping species' needs (e.g., sage-grouse lekking and nesting raptors) to the extent practicable. Examples of these efforts, and additional voluntary actions that SCM has already implemented or has made commitments to implement on behalf of sage-grouse and their habitat, are provided in the following subsections. In addition to these actions, all prior DEQ permit commitments would be adhered to throughout the life of the project, including monitoring and reporting requirements.

5.1 Avoidance

SCM's initial efforts to avoid impacts to sage-grouse and their habitats occurred during the planning phase of the project. These included meeting with the DEQ to discuss options to achieve this goal and through adoption of recommendations outlined in Montana EO 12-2015 (State of Montana 2015a), to the extent practicable for the project. Examples of avoidance efforts include:

- analyzed at least five (5) distinct alternative routes to identify the best option to avoid potential impacts to sage-grouse and other wildlife and their habitats during construction, operation, and reclamation of the road corridor. The final route selection was based on the following parameters:
  - minimization of the length of the haul road traversing sage-grouse Core Areas to the extent practicable, given the project location and other resource concerns;
  - maximization of distance between the proposed road alignment and proximate wildlife features such as grouse leks and raptor nests;
  - elimination or reduction of sight lines and noise relative to proximate wildlife features through use of natural (topography) or manmade (placement of topsoil piles, etc.) barriers;
  - minimization of noise and dust by selecting the shortest linear travel distance; and
  - alignment of the road to avoid as many active lek NSOs as possible given other resource concerns; and
- complete initial vegetation removal within the disturbance corridor during the non-breeding season (July 16 through March 14), most likely accomplished by mowing the disturbance corridor outside the stipulation period to remove sagebrush.

5.2 Minimization

Where avoidance was or is not possible, SCM identified options to minimize potential impacts to sage-grouse and their habitats and deviations from EO 12-2015 (State of Montana 2015a. Such efforts include:

- design the road alignment to minimize surface disturbance within lek buffers and provide the greatest possible visual and audio barriers between the disturbance corridor and wildlife-related features, including strategic placement of cut and fill material to create or enhance such barriers;
- consolidate infrastructure (e.g., co-located the road and overhead power line);
- space new overhead transmission line poles along the haul road route to minimize placement within 0.6-mile NSO lek buffers;
- select single power pole construction (vs. H-frame) and install deterrents on power poles to reduce perching options for avian predators, and follow other BMPs recommended by APLIC (2015, 2012, 2006) to minimize potential impacts to sage-grouse and other avian species;
- limit the number of other light poles and potential perches for avian predators;
- turn idling equipment off during operation of the haul road to the extent practicable (i.e., when weather conditions allow based on equipment needs);
- limit blasting needed in rocky areas etc., during the construction phase to daytime hours (8:00 a.m. to 6:00 p.m.);
- conduct continuous noise level monitoring at active sage-grouse lek perimeters from March 1 through July 15 during road construction and reclamation;
- discontinue construction between 6:00 p.m. and 8:00 a.m. if individual or cumulative noise levels exceed 10 dBA above baseline noise at that location;
- implement other appropriate BMPs during all phases to minimize erosion, employ weed control, and control trash and other predator attractants, etc.;
- build new fencing to current standards for sage-grouse and big game, place fencing as close to the road berm as possible and/or install markers on fence wires to enhance visibility per current guidelines from the MFWP (2012) and/or USDA (2012) Natural Resources Conservation Service;
- enhance the likelihood of wildlife using new culverts as crossings by consulting the latest research such as the Wildlife Crossing Structure Handbook – Design and Evaluation in North America (U.S. Department of Transportation Federal Highway Administration, Publication No. FHWA-CFL/TD-11-003);

  - construct/remove road segments near or at stream crossings during low flow periods;
  - keep construction equipment out of wetland/riparian/saturated areas, or time construction to occur when ground is frozen to minimize soil compaction; and
  - include erosion protection at culvert crossings to minimize impacts to stream flow and channels; and
- modify grazing lease to support cheatgrass control and manage livestock presence in sage-grouse brood habitat in riparian areas to extent practicable using fencing and rotational practices.

5.3 Reclamation

SCM has strict reclamation standards that must be met per its State mining permits issued under MSUMRA and SMCRA. Under these permits, conservation measures and reclamation requirements are developed on a case-by-case basis.

The EO (State of Montana 2015a) states that reclamation should reestablish native grasses, forbs, and shrubs during interim and final reclamation to achieve cover, species composition, and life form diversity commensurate with the surrounding plant community or desired ecological condition to benefit sage-grouse and replace or enhance sage-grouse habitat. This guidance is also consistent with permit requirements under MSUMRA and SMCRA. Where sagebrush establishment is prescribed, it is defined as meeting the standard outlined in the individual reclamation plan for the operator.

In addition to its State permit requirements for wildlife habitat replacement, the SCM had previously developed a separate Habitat Recovery and Replacement Plan (HRRP) for sage-grouse (refer to State Mining Permit C1979012; HRRP and Section 17.24.312). The HRRP and SCM's current permit document outline multiple additional commitments to enhancing sage-grouse habitats. Those commitments are in addition to compensatory mitigation outlined in Section 5.4 for the proposed haul road project.

The HRRP and SCM's current permit include methods and techniques that would also be applied during reclamation of the haul road corridor, which would provide maximum benefit to such efforts and ensure consistent reclamation practices, which ultimately would contribute to a more balanced reclaimed landscape across SCM's combined project areas. Examples of measures adopted for the proposed haul road project and/or already included in the HRRP specifically to benefit sage-grouse include, but are not limited to:

- reclaiming any temporary construction disturbance immediately upon completion of that project phase;
- performing reclamation work between 8:00 a.m. and 7:00 p.m. from March 15 through July 15;
- removing all project-related infrastructure at project end;
- continuing to investigate additional methods to establish or enhance sagebrush communities in reclamation;
- using native seed mixes in certain specified areas identified as Pastureland prior to mine-related disturbance (i.e., convert post-mine land use from Pastureland to native habitats in those locations);
- incorporating regionally-sourced, pure live sagebrush seeds and appropriate forb species in sagebrush plantings, per specifications, to enhance forage potential for sage-grouse;
- removing unnecessary fencing in appropriate areas; and
- maintaining SCM's existing commitment outlined in the HRRP to work with MFWP to assist them with finding eligible lands (locally or elsewhere in the state) for applying a pool of funds committed to by SCM toward landowner incentive programs or similar conservation efforts that will provide protection of sage-grouse habitat through improved grazing systems, conservation easements, or funding to purchase or retire private mineral leases (for example).

5.4 Compensatory Mitigation

A collaborative process between the Program and SCM identified the level of compensatory mitigation obligation for the proposed haul road project. The parties agreed to develop a compensatory mitigation approach specific to this project to avoid permitting delays while the State of Montana continued efforts to finalize a mitigation approach and supporting Habitat Quantification Tool (HQT).

On December 5, 2017, the Program provided SCM with four specific options for achieving compensatory mitigation objectives for the project. The options were:

- apply a functional acre approach using the July 2017 draft version of the Program's HQT for the disturbance limit with an overhead power line scenario;
- apply a functional acre approach using the July 2017 draft HQT for the disturbance limit with a buried power line scenario;
- apply a physical acre approach using fixed ratios, as outlined in the draft Keystone XL Pipeline project's draft Sage-grouse Conservation Plan (WESTECH

2017) for impacts to sage-grouse habitat in eastern Montana, and modified by the Program (i.e., averaged the ratios); or

- apply a physical acre approach following Utah's preliminary fixed ratio of 4:1 (four acres mitigated for every 1 acre impacted), regardless of habitat type.

The physical acre method is based on site-specific data for habitat types within the project footprint rather than the functional habitat acres calculated by the State's draft HQT (a raster-based GIS model).

SCM chose to follow the physical acre approach based on the draft Keystone XL pipeline mitigation agreement procedure to determine SCM's compensatory mitigation obligation for the haul road project. This approach was selected because of the draft nature of Montana's HQT and accompanying policy guidance.

To inform the analysis of "unsuitable habitat" as described in the EO, SCM performed a GIS analysis to calculate parameters for slope and terrain roughness for the proposed haul road project to identify smaller patches of unsuitable habitats within the Core Areas and General Habitat intersected by the disturbance corridor (see Section 2.2.2).

Having site-specific, field-based data enabled the adoption of a more refined approach and accurate accounting of impacted vegetation communities, which then informed adjustments to total acreages. Project impacts to sage-grouse habitats were calculated by overlaying the project footprint onto current boundaries for Core Areas and General Habitats, and calculating physical acreages, by vegetation type. Vegetation communities within the disturbance corridor were identified using detailed mapping data collected in the field during baseline inventories (WESTECH 2015), as required by MSUMRA and DEQ). GIS-based analyses were used to calculate slope and roughness characteristics, as described in Section 2.2.2. Those acreages were adjusted to:

- exclude unsuitable habitats (as defined above), if any;
- exclude vegetation types (i.e., "Other" communities) known not to provide sage-grouse habitat within the narrow disturbance corridor boundary; and
- exclude other vegetation communities such as conifer-dominated habitats and steep (i.e., ≥20° slope), rugged terrain not typically used by sage-grouse, as noted in the current EO (12-2015) and/or documented in peer-reviewed literature.

A mitigation ratio was assigned to each vegetation category based on vegetation types and location in Core Area or General Habitat. Ratios account for direct and indirect (those extending beyond the project footprint and timeline) impacts of the project, and are generally based on habitat values relative to sage-grouse. For example, intact sagebrush patches with native grasses and forbs in the understory would have a higher ecological value to sage-grouse than native grassland alone, with sagebrush in Core

Areas valued even higher than in General Habitats. These value differences are based, in part, on the reliance of sage-grouse on sagebrush throughout their life-cycle, the longer recovery time for sagebrush habitats, and the greater importance placed on Core Areas as a higher conservation priority.

The use of ratios also ensures that the proposed compensatory mitigation is commensurate with the impacts of the project. Here, the ratios are project-specific and incorporate Universal Principles of Compensatory Mitigation (Sprague et al. 2015), as listed below.

1. COMMENSURATE. Compensatory mitigation should be reasonably related to the project and proportional to the reasonably foreseeable residual impacts. For residual impacts, the compensatory mitigation must take into account both direct and indirect impacts, as well as other factors such: as the quality of the resource; the degree to which the resource is important, scarce, sensitive, or requires protection; the timeliness of the compensatory mitigation; the risk of a measure's failure; and any applicable mitigation standard (e.g., net benefits for sage-grouse).

2. MAGNITUDE OF IMPACTS TO THE RESOURCE. Consider the baseline condition and trend of the resource in terms of quantity, quality, and characteristics at the impacted site, as well as the amount of change to the baseline condition, considering direct and indirect impacts. The magnitude of impacts must be compared to the applicable mitigation standard to determine the magnitude of the benefits to the resource requiring compensation. This assessment is based on site-specific surveys of the project area, habitat or species information in local databases, aerial photography, and/or project-specific GIS shapefiles rather than the HQT model described above.

3. TIMELINESS. The preference is to achieve the compensatory mitigation outcome(s) prior to the impacts resulting from a project. The value of the compensatory mitigation should be adjusted to account for any lack of timeliness with the compensatory mitigation measures, which reflects increased uncertainty and results in a time-value delay of conservation benefits.

4. RISK. Consider the risk of mitigation ineffectiveness, or loss of durability when determining the amount of compensatory mitigation, including consideration of the risk from foreseeable changing circumstances such as climate change, wildfire, and invasive species.

5. ADDITIONALITY. Ensure that compensatory mitigation demonstrates financial and resource additionality (i.e., a compensatory mitigation measure is demonstrably new and would not have occurred within the compensatory mitigation measure) and demonstrably augments, rather than duplicates, similar projects funded or foreseeably expected to be funded by government appropriations.

6. MITIGATION BANKS/MITIGATION FUNDS. When a project proponent uses a mitigation bank or mitigation exchange, verify that the credits are equivalent to the required compensatory mitigation obligation. When a project proponent makes a financial contribution to a mitigation fund, the acres of compensatory mitigation need to be converted into monetary terms to determine the appropriate contribution to the fund.

7. LANDSCAPE VULNERABILITY. Policy to consider residual impacts to irreplaceable resources that are considered important, scarce, sensitive, or have a protective legal mandate that has been previously identified in a mitigation strategy as warranting compensatory mitigation. Irreplaceable resources can be defined as those resources recognized through existing legal authorities as requiring particular protection from impacts and that, because of their high value or function and unique character, cannot be restored or replaced.

For SCM's haul road project, mitigation acreage ratios were applied at rates of 4.22:1 for habitat impacts in Core Area and 3.2:1 for such impacts in General Habitat. The Core Area ratio was derived by averaging the two ratios applied to habitats in Core Area for the Keystone XL pipeline. No changes were made to the Keystone XL pipeline ratio for General Habitat. These ratios are intended to appropriately mitigate adverse direct and indirect impacts to grouse and their habitat within the disturbance corridor.

The final adjusted acreage total for Core Area and General Habitat categories for the haul road project were multiplied by their respective ratios, and the two products were summed. That combined total acreage was then multiplied by a cost-per-acre; such costs could be based on regional market values or another value agreed to by both parties. For the haul road project, a value of $650/acre was agreed upon (U.S. Department of Agriculture 2016).

SCM will also undertake multiple additional voluntary restoration and enhancement actions in the general project area (see Section 5.5). In recognition of these efforts, the Program incorporated approximately 111.5 acres of expected benefits; at $650/acre, these voluntary actions were valued at $72,475.00. As indicated, these voluntary efforts are in addition to reclamation otherwise required by DEQ permits and to required compensatory mitigation per the EO. The monetary value of these voluntary actions decreased SCM's total compensatory mitigation obligation (Table 2).

Table 2. Montana Sage-grouse Compensatory Mitigation Obligation for Impacts Associated with the Spring Creek Mine's Proposed Haul Road Project.

Baseline Vegetation Community Type[1]	Core Area Acreage	General Habitat Acreage	Total Acreage within Corridor Boundary
Shrublands (native grass and crested wheatgrass understory)	338.24	266.69	604.93
Shrub-dominated Breaks	22.19	55.20	77.39
Native Grasslands	37.09	14.59	51.68
Drainage Bottom (herbaceous and mesophytic shrub - moist meadow)	1.34	17.01	18.35
Existing Infrastructure/Surface Impacts[2]	7.49	8.92	16.41
Conifers/Conifer-dominated Breaks[3]	--	--	--
Other Habitats[3]	--	--	--
ACREAGE SUBTOTALS	406.35	362.41	768.76
All community acreages with slopes ≥20° not previously excluded[4] (i.e., additional acreages subtracted from subtotals above)	-5.20	-35.74	-40.94
REVISED ACREAGE SUBTOTALS (accounting for slope)	401.15	326.67	727.82
Total mitigation ratios: Core Area Acres x 4.22; General Habitat Acres x 3.2	1,692.853	1,045.344	2,738.197
SUBTOTAL for MITIGATON OBLIGATON: Adjusted Acreage (2,738.197) x $650/acre			$1,779,828.05
Total mitigation obligation adjusted for SCM's additional voluntary conservation efforts (111.5 estimated acres benefitted x $650/acre)			$72,475.00
GRAND TOTAL AM5 COMPENSATORY MITIGATION OBLIGATION[5]			**$1,707,353.05**

[1] Nomenclature for vegetation community types follows the Baseline Vegetation Report and/or map codes prepared for the AM5 project: Baseline Vegetation Inventory, Arrowhead Amendment Project, Big Horn County, Montana. WESTECH Environmental Services, Inc. (WESTECH) 2015.

[2] Existing Infrastructure/Surface Impacts = roads (improved gravel, two-tracks: 7.44 acres in Core Area; 8.54 acres in General Habitat) and other surface impacts resulting from grazing, agriculture, or human activities (e.g., soil impacts) (WESTECH 2015). Roads include those mapped during the original baseline inventory and subsequent additions from CPE's surveyed features shapefiles (all shapefiles provided to the Program).

Table 2. Continued.

[3] Vegetation communities identified in Table 1 that were accepted for exclusion from compensatory mitigation obligations by the Montana Sage Grouse Habitat Conservation Program included all conifer-dominated types and all types grouped into the "Other Habitats" category (i.e., hay cropland, pastureland-grazed/go-back land, prairie dog colonies [all Tame Pasture communities], Deciduous tree bottom, and a small pond): approximately 193.66 total acres (126.7 conifer-dominant acres, 66.96 "Other Habitats" acres). This approach was supported by one or more of the following resources: references to reducing conifer habitats in Montana EO 12-2015; numerous peer-reviewed journal articles quantifying the detrimental impacts of conifers on sage-grouse use of sagebrush communities, survival of hens and nests, and overall population growth; and site-specific data demonstrating that such habitats are not used by sage-grouse in the AM5 Corridor.

[4] Additional acreages accepted for exclusion from compensatory mitigation obligations by the Montana Sage Grouse Habitat Conservation Program included all vegetation acres in areas with slopes ≥20° (36.4%) and not previously excluded: approximately 75.34 total acres (5.20 in Core Area and 35.74 in General Habitat). This approach was supported by references to badlands and canyons in Montana EO 12-2015 and numerous recent peer-reviewed journal articles quantifying avoidance of steeper and more rugged terrain that might otherwise serve as sage-grouse habitat.

[5] The Montana Sage Grouse Habitat Conservation Program accepted the acreages and total compensatory mitigation obligation for the AM5 Corridor outlined in Table 2 via an email to representatives of CPE and DEQ on 2/23/2018.

SCM committed to a compensatory mitigation obligation of $1,707,353.05 to be deposited in the Montana Sage Grouse Stewardship Fund (see MCA 76-22-111((1)(a)(ii)). Funds would be deposited after confirmation of approval for both the permit amendment and the compensatory mitigation plan, and before construction begins.

The MSGOT and Program would disburse these funds through the Stewardship Account granting process to conserve habitat and sage-grouse populations through offsite mitigation. Offsite mitigation is preferred in this case due to the existing mining activity in the immediate area and the new addition of the haul road. Any benefit of onsite mitigation would be negated until such activities were completed and disturbed lands fully reclaimed. Greater conservation benefits to sage-grouse can be secured offsite.

5.5 Additional Voluntary Efforts

In addition to these efforts, CPE is voluntarily implementing a variety of additional actions that will contribute to offsetting the short- and long-term impacts of the proposed haul road project. These efforts are consistent with guidance provided in Montana EO 12-2015 (State of Montana 2015a). It is important to note that these voluntary efforts are above and beyond any DEQ permit (mitigation) requirements associated with the haul road project or existing SCM operations. That is, they have been or will be implemented regardless of permit and compensatory mitigation requirements for sage-grouse. All voluntary actions listed below will be implemented on CPE property in Montana.

- CPE has implemented or will implement the following efforts in the vicinity of the haul road project.
    - Installed four (4) guzzlers to enhance water features in the area in 2017, seven (7) stock tank escape ramps to be installed; Sage-grouse and sharp-tailed grouse have already been documented using at least one guzzler via motion-triggered trail cameras.
    - Inventoried all overhead power lines planned for removal in 2017.
    - Removed 6.0 non-contiguous miles of overhead power line through 2017; several additional miles of overhead lines will be removed.
    - Committed to secure a protective agreement for conservation purposes on 700 contiguous acres in sagebrush habitat; minimum 10-year commitment with renewal options.
    - Committed to focused conifer removal across approximately 490 non-contiguous acres in and immediately adjacent to sagebrush habitats.
    - Committed to more than 2.0 miles of fence removal; 1 mile passes within 150 feet to 0.25 mile of active leks (fence marking and additional removals may occur).
    - Committed to on-going treatments for mosquito larvae control for West Nile virus in stock tanks and tire storage areas.
    - Committed to not use anti-coagulant poisons for control of black-tailed prairie dogs; colonies in and near the AM5 haul road area serve as primary breeding sites for sage-grouse.
    - Committed to treat burned areas for cheatgrass.
    - Committed to protect natural green acres (i.e., potential brood-rearing habitat) from trampling and other impacts of livestock grazing.
    - Committed to closure and reclamation of 0.75 mile (non-contiguous) of two-tracks and other roads.
- CPE has implemented or will implement the following efforts associated with SCM.
    - Installed one (1) guzzler to enhance water features and four (4) escape ramps in stock tanks on a neighboring cooperator's land in 2017.

- o Installed two (2) guzzlers and two stock tank escape ramps on Spring Creek surface in 2017.
- o Applied dust suppressant on 1.1 miles of high-use gravel road in sagebrush habitat immediately northeast of the northern-most Core Area in the project area in 2017 (on-going annually).
- o Committed to on-going treatments or drainage of stock tanks for mosquito larvae control for West Nile virus.
- o Committed to treat outside tires for mosquito larvae control for West Nile virus.
- o Committed to install bat houses at strategic locations for mosquito control to help manage West Nile virus.
- o Committed to focused conifer removal across approximately 660 non-contiguous acres in and immediately adjacent to sagebrush habitats.
- o Committed to additional sagebrush and forb reclamation.
- o Committed to closure and reclamation of approximately 1.0 non-contiguous mile of two-tracks and other roads.
- o Committed to marking approximately 1.5 non-contiguous miles of fence (additional marking and fence removals may occur).
- o Committed to not use anti-coagulant poisons for control of black-tailed prairie dogs; colonies in and near the AM5 haul road area serve as primary breeding sites for sage-grouse.
- o Committed to treat burned areas for invasive grass and weed species.
- o Committed to treating 35 acres of cheatgrass invasion areas.

6.0 References

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Figure 1. Cloud Peak Energy's Proposed AM5 Haul Road Project between the Spring Creek Mine and Youngs Creek Mine.

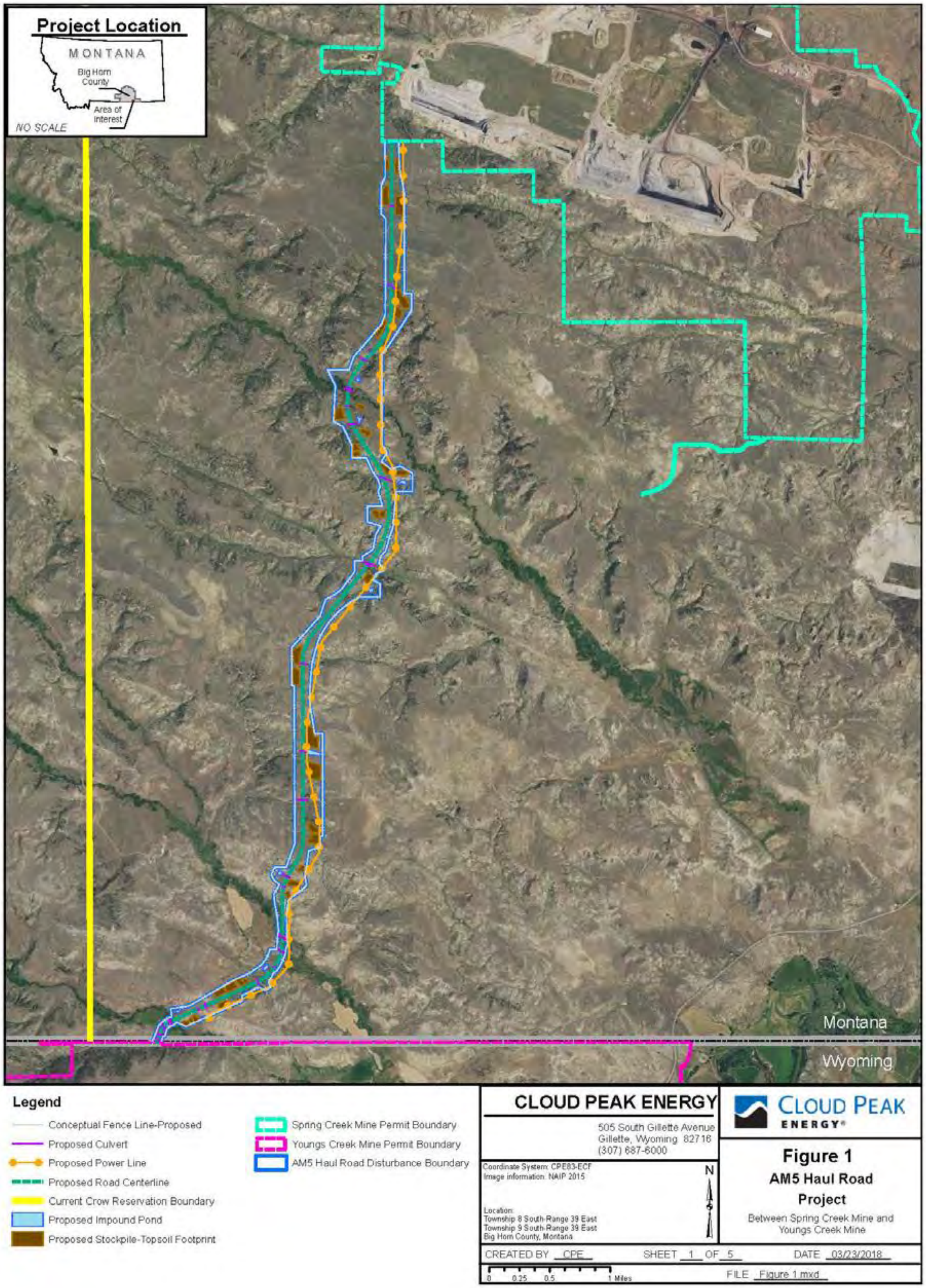

Figure 2. Sage-grouse Core Areas and Lek No Surface Occupancy (NSO) Buffers near the Spring Creek Mine's Proposed AM5 Haul Road Project.

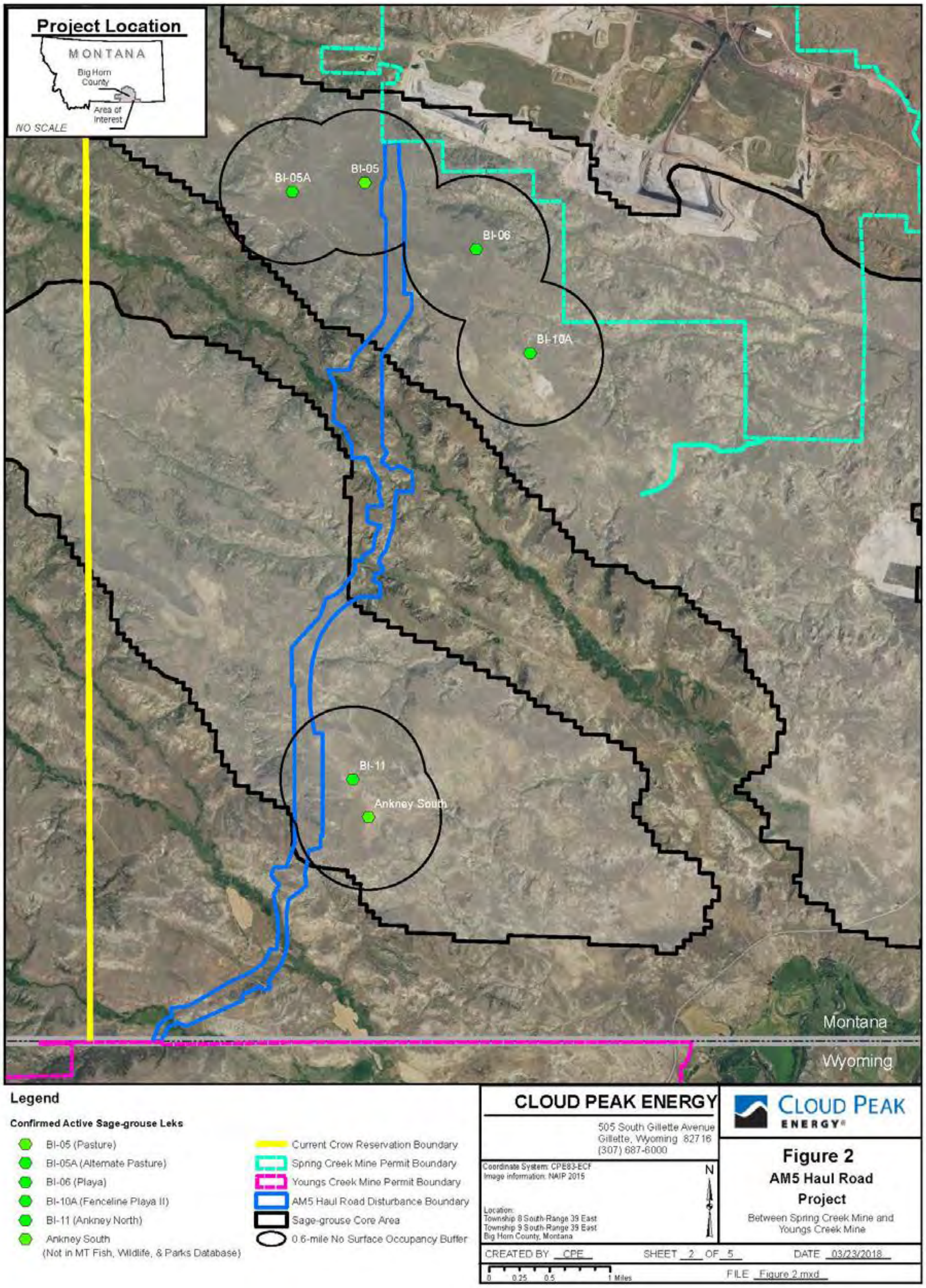

Figure 3. Baseline Vegetation Communities in the Spring Creek Mine's Proposed AM5 Haul Road Project Disturbance Corridor.

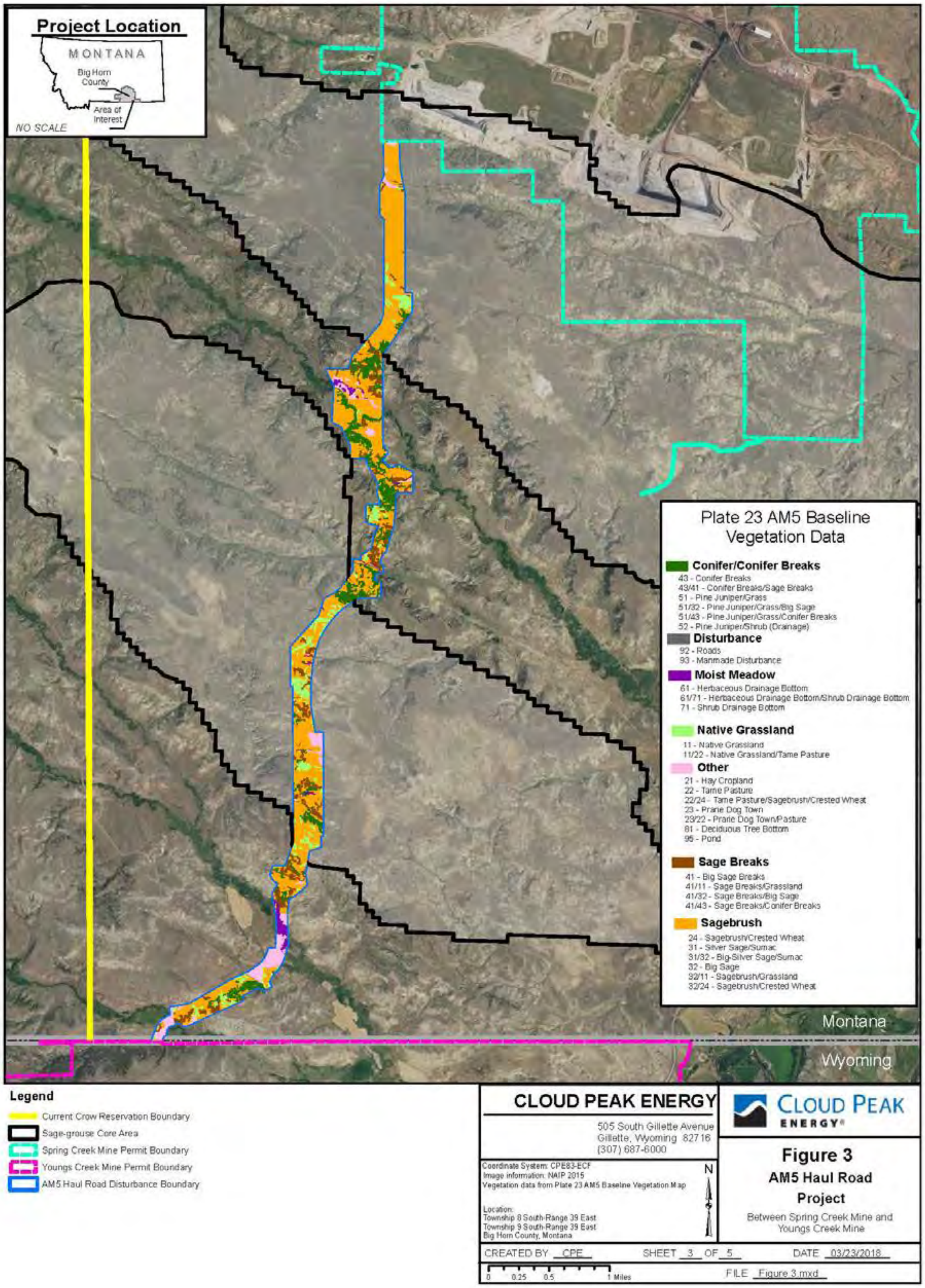

Figure 4. Slope Analysis in the Spring Creek Mine's Proposed AM5 Haul Road Project Disturbance Corridor.

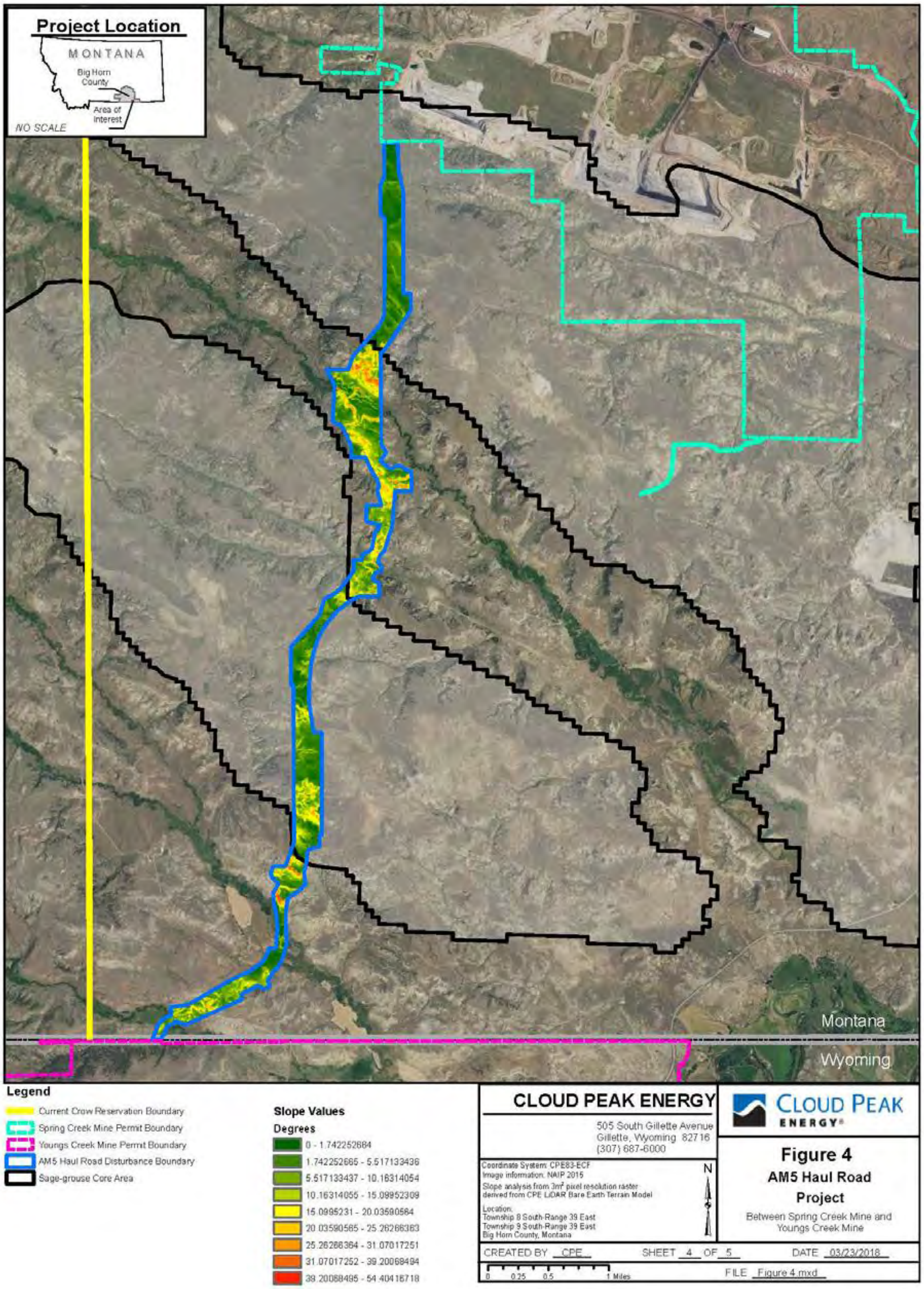

Figure 5. Terrain Roughness Analysis in the Spring Creek Mine's Proposed AM5 Haul Road Project Disturbance Corridor.